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Working Capital in Street Railway Valuation

By Delos F. Wilcox, Ph.D.
Public Utility Expert, Elmhurst, L. I.

ONE of the most noteworthy efforts of recent years to bring about an intelligent consideration of the problems of valuation through coöperative effort was the valuation of the Pittsburgh Railways by a joint board of engineers, made up of representatives of the city of Pittsburgh, and of the Pittsburgh Railways Company, with the chief engineer of the Pennsylvania Public Service Commission presiding. It is thought in Pennsylvania that most of the discreditable differences of opinion between opposing interests in street railway valuation work can be eliminated by this process of conference, coöperation and joint agreement. The conditions upon which a particular set of valuation data is to be compiled are laid down in advance; the assumptions are defined and it is presumed that identical results can be obtained by the application of the same rules under the same conditions to the same property. Metaphorically speaking, the Public Service Commission gets the opposing engineers into the same room, knocks their heads together and compels them to agree upon all those facts and inferences from facts with respect to which honest men, striving to reach an agreement, have no real excuse for ultimate difference.

The Pittsburgh Engineers Valuation Board was composed of eminent engineers who found themselves able to agree upon many things, although by no means upon all things, entering into a determination of the fair value of the Pittsburgh Railways property for rate purposes. Among the things upon which they reached a unanimous agreement was working capital. The engineers for the city thought that the total rate base should be about $48,000,000, while the engineers for the company stood out for $65,000,000 to $70,000,000, but in both figures were included an allowance of $1,075,000 for "cash working capital" and an allowance of $1,134,000 for "stores and supplies," making a total of $2,209,000, or something more than 4 per cent of the total valuation admitted by the city's representatives and something more than 3 per cent of the total valuation claimed by the company's representatives.

In this case the board defines working capital as "the total mobile capital required in addition to the fixed capital," and goes on to say:

> "Working capital may appear as cash or equivalent, materials and supplies. It is that reservoir of funds which is necessary for the efficient and economical transactions of daily operation."

The board then states that it has separated working capital into two elements in order better to apply the actual experience of the Pittsburgh company. It says:

> "The first element covers general stores and supplies. . . . The second element in working capital covers funds necessary to meet minor irregular payments incident to the ordinary conduct of the business, for the prompt payment of bills in order to secure trade discounts, for prepayments which may be desirable and necessary, and for the purchase of materials in an advantageous market in advance of pressing necessities."

With respect to the first element the board says:

> "The inventory of stock in storehouses and storage yards, carried in the general accounts of

the company, and not including the miscellaneous distributed small stocks of supplies and tools in barns and shops, showed $906,571. . . . The smaller scattered amounts in the shops and barns, the stores of track and roadway supplies at various locations and the scrap materials, salvaged from completed jobs but not yet disposed of, were all inventoried and found to amount to $227,429, which amount added to the foregoing figure for materials makes a total of $1,134,000."

The engineers found no difficulty in allowing the figure just given as representing the first element of the "mobile capital" which, according to their definition, is the working capital, but with respect to the second element, which takes the form of cash or funds, the engineers were much less clear, and were finally compelled to resort to an act of judgment. They say:

> "This board knows of no generally accepted rule for determining the amount of working capital necessary in this case. There are, however, various ways in which the problem can be approached, and figures have been deduced to show the range of estimates."

THE BALANCE SHEET METHOD

Their first way of approach is by an examination of the balance sheets of the company and an analysis to determine what construction is in progress and to what extent the construction accounts and the operating accounts have been merged. They say that the cash account should be studied to ascertain for what purposes the cash on hand has been assembled, and add:

> "To obtain the figure of the working capital from the balance sheets, cash, prepaid accounts, accounts receivable, and bills receivable should be added and accounts payable and bills payable should be deducted from the total so obtained."

The board says that the balance sheets of the earlier years do not afford a conclusive figure, for the reason that in the past the Pittsburgh Railways Company has depended more or less upon the resources of the holding concern, the Philadelphia Company. Moreover, it calls attention to the fact that on account of higher prices the money requirement of the present and future will be greater than in the past. It also points out that a higher standard of credit should be maintained than the company has previously enjoyed and that while this perhaps may be effected principally by the establishment of proper reserves, it is promoted also by adequate working capital. The average figure deduced from the balance sheets for the year 1918 was $1,031,468.

CASH IN BANK—WHO FURNISHED IT?

Before we leave this first method suggested by the board as a way of estimating cash working capital, attention should be briefly directed to the specific balance sheet items used in arriving at the result. First, on the positive side, is the item of "cash." It is a common fallacy in dealing with the problem of working capital in valuation proceedings, to assume that cash "lying idle in the bank" is working capital in the sense that it is money advanced by the investors, or money borrowed on bills payable, or money accumulated from the rates, which the investors had the right to put into their pockets and use for their own purposes. It is clear that under any one of these conditions, cash on hand, if necessarily held for use in the conduct of the business, is true working capital, upon which the public is bound to pay a return, the same as on fixed capital. The fallacy lies in the failure to see that in the ordinary status of a going street railway business, the cash on hand is chiefly cash accumulated from fares and not yet paid out in meeting the expenses pertaining to the service for which the fares were received. It seems to be assumed without thought that the nickel or the seven cents deposited by the car rider in the fare box thereby and thereupon becomes the property of the stockholders, to do with as they please; whereas the fact is that the fare represents the cost of service advanced by the car rider to the company with which to pay the wages of motorman and conductor, the power bills, the track and car maintenance expenses, salaries of officers and clerks, the taxes, the bond interest and finally the dividends, most of which are deferred expenditures. In a controlling sense, therefore, the cash on hand, so far as it represents service revenues which the company has not yet gotten around to pay out to its creditors, does not belong to the company at all, but is held in trust for the creditors until all of the elements of cost entering into the service which the car rider has consumed and paid for are liquidated. It is clear, therefore, that the balance-sheet rule, as laid down by the Pittsburgh Engineers Valuation Board, is defective in its treatment of the "cash" item. Before one can tell what relation, if any, this item has to working capital, one must know where the cash came from and what claims there are against it.

The next balance-sheet item on the positive side is "prepaid accounts." These represent cash which the company has found it expedient or necessary to pay in advance of the utilization of the materials or services represented by them. This item may include such things as insurance, car license fees, certain rentals and certain forms of taxes. Stores and supplies, if paid for in advance, would be included here if they were not treated as a distinct and separate element of working capital. This item of prepaid accounts represents an unquestioned and absolute necessity for working capital, except to the extent that the money required for prepayments was available from revenues collected in advance of service rendered or from accumulations of current revenues not immediately needed on account of deferred payments.

The next item, namely "accounts receivable," represents deferred revenues for service, the cost of which the company may have already been compelled to pay, at least in part. To the extent that the company has, in fact, had to pay the cost of service rendered, while deferring the collection of revenues from the beneficiaries of the service until later on, the accounts receivable represent a legitimate claim for working capital.

The final item on the positive side of the calculation is "bills receivable." Clearly this item, like the "cash" item, needs to be looked into. If the bills receivable are interest-bearing notes, there can be no reason why they should be included as working capital upon which the car riders are required to pay the company a rate of return in addition to the return paid in the form of interest by the company's debtors. If the interest received on bills receivable is included in the company's income statement used in the determination of the amount of revenue necessary to be derived from the rates, this duplication does not exist and the bills receivable may be regarded in the same light as the accounts receivable.

On the other side, the board suggests the deduction of two balance-sheet items, namely, "accounts payable" and "bills payable," in arriving at the amount of working capital required. It is evidently proper, in this connection, to put accounts payable on the side opposite to accounts receivable, and bills payable on the side opposite to bills receivable. However, if the term "accounts payable" be expanded to include all of the company's deferred payments, such as accrued wages and salaries, accrued taxes, accrued rentals, accrued interest and accrued dividends, the deduction is likely to assume unexpected proportions. If the item "accounts payable" is used in the usual narrow sense of that term, then the balance-sheet method of determining working capital described by the Pittsburgh board is in a very important respect incomplete and defective. In any case, it does not include among the offsets or deductions the item of advance payments or "unearned revenue," which normally results in the street railway business from the sale of tickets in strips or in books. Where the difference between the cash fare and the ticket fare is considerable, especially during a period of rising rates, it is quite usual for the great majority of the regular car riders to purchase tickets. Even where tickets are sold in strips of four, five or six, the company has on the average a large amount of advance revenue, and this condition is accentuated where tickets are sold in larger quantities, as for example, eleven for 50 cents, sixteen, twenty or twenty-five for a dollar, or one hundred for four dollars.

ONE MONTH'S OPERATING EXPENSES

The second method of estimating cash working capital described by the Pittsburgh board is to take one month's operating expenses, which, in the case of the Pittsburgh Railways Company during the first three months of 1919, averaged $1,182,780. The engineers do not explain or defend this method, and upon close examination it appears to be, so far as the street railway business is concerned, wholly indefensible. If street railway revenues were not collected day by day as the service is rendered, but, like the revenues of most other utilities, were collected once a month for service rendered during the preceding month, there would be some logic in claiming that one month's expenses are, in a rough way, a measure of the "cash working capital" required. But where the business is done upon a strictly cash basis and the service is sold and paid for the moment that it is performed, the company receives from its patrons the entire amount of the revenue covering the cost of the service before it is compelled to make the disbursements normally included in operating expenses.

A PERCENTAGE OF SOMETHING

The third method of estimating the cash working capital allowance, suggested by the Pittsburgh engineers, is to assume a certain percentage either of the property account or of the outstanding securities. In this connection, they say that 2 per cent on the property account is sometimes applied. With respect to this method, also, explanation or defense is omitted, and in the absence of any affirmative reason for adopting it or any proof that the results obtained are pertinent to the inquiry, it is perhaps unnecessary to criticize it. The only apparent reason for taking a percentage basis is the desire to provide an amount of working capital roughly proportionate to the size of the enterprise.

AN ARBITRARY ESTIMATE

The fourth so-called "method" suggested by the engineers for estimating cash working capital requirements is even more baffling—it is "to apply business judgment." In support of this method the opinion of the receivers for the company is cited to the effect that in the case of the Pittsburgh Railways a cash balance of not less than $750,000 should always be maintained. The engineers state that this minimum figure, increased by the excess of accounts receivable over accounts payable, would amount to $975,402. Again, we have an entire absence of explanation or defense, but obviously the method is based upon the now familiar fallacy that the cash balance carried by a street railway company is made up from funds furnished by the investors.

It was from a consideration of these four methods that the board of engineers unanimously agreed upon the figure $1,075,000 for cash working capital, upon the assumption, apparently, that a composite of four equally bad theories would produce a just result. Forsooth, by careful and coöperative scrambling, four bad eggs may be made into one good omelet.

THE INTEREST FUND IN CLEVELAND

In connection with the development of the service-at-cost idea, originating with the Cleveland Railway settlement of 1910, devised by the late Judge Robert W. Tayler, it is customary to establish a "barometer" or "stabilizing" fund as an automatic or semi-automatic regulator of the fares. In Cleveland, under the Tayler plan, this is called the "interest fund." It was originally established in 1910 by the setting aside of $500,000 in cash, represented by floating indebtedness and included in the permanent capital value of the property. This $500,000 must be considered as cash working capital. It is entirely apart from and in addition to the inventory of stores or materials and supplies. These were included in the valuation of the Cleveland Railway property represented by outstanding bonds and recognized capital stock.

WORKING CAPITAL UNDER MONTREAL TRAMWAYS CONTRACT

Another service-at-cost franchise that has deservedly attracted a great deal of attention is the Montreal Tramways contract negotiated in 1918. As a basis for the financial section of this contract and for the semi-automatic regulation of rates, a valuation of the physical property was made and an agreed upon "capital value" was written into the contract. A permanent Tramways Commission was established with the function of exercising public control over the operation of the Montreal street railways and of interpreting and applying the terms of the contract. The initial capital value was fixed at $36,286,295. However, a clause was inserted to the effect that this sum "does not include any working capital," and, therefore, "it is agreed that any working capital required shall, as and when ordered by the Commission, be furnished by the company." The contract does not specifically provide that the "working capital" shall be added to and become a part of the "capital value," but it does provide that "upon such working capital so furnished the company shall receive a return at the rate of 6 per cent (6%) per annum." As 6 per cent is the basic rate of return to be paid on the "capital value," the treatment of working capital is nearly equivalent to its inclusion in that item.

In its original orders for the inauguration of the financial plan contemplated by this contract, the Montreal Tramways Commission did not fix an amount for working capital, but appeals were taken to the Quebec Utilities Commission, which in its decision of September 20, 1918, found that a working capital allowance should be made. Under this caption the Commission included the book value of the material in stores, the material in process of manufacturing and the cash on hand at the date when the contract went into effect. These three items totaled the sum of $914,348, of which cash was only $20,575 and material in process of manufacture only $6,023. The Commission remarked that "the above items were not included in the physical assets of the company, Schedule A of the contract, which were valued at $36,286,295." Moreover, for the period intervening between February 9, 1918, the date when the contract went into effect, and October 3 following, when the new financial scheme would come into full operation, the Utilities Commission figured out a deficit of $620,000 to be provided for. With respect to this item, it said:

> "There is no direct provision under the contract for dealing with this deficit. The contention of the company that it should be provided for out of tolls to be taken in during the year is in our opinion quite untenable. The argument of the city of Montreal, upon the other hand, that it should be ignored, inasmuch as it had no existence when the contract came into effect, is no solution of the actual difficulty. We have resolved to treat it as working capital."

Discussing this item and the items of materials and cash previously referred to, the Commission went on to say:

> "Taking all of the items into account we consider we are not dealing unfairly by either the company or the public in fixing the total working capital at the sum of $1,550,000, upon which it is entitled to interest at 6 per cent per annum, or $93,000."

In a subsequent proceeding, however, the Tramways Commission showed that stores to the value of $534,055.68 had been inventoried as a part of the physical property and included in the capital value, and upon this showing the working capital allowance fixed by the utilities Commission, was reduced by that amount. The Tramways Commission, in its first annual report, covering the period to June 30, 1919, referred to the deficit as follows:

> "The contract indicates the method of treating any eventual deficit; it is not necessary to add this to working capital."

Thus, under the Montreal contract, as it is interpreted by the Tramways Commission, stores and supplies are treated in part as working capital and in part as fixed capital, and deficits from operation under the service-at-cost plan are not to be considered as working capital.

THE RESERVE FUND IN THE BOSTON SERVICE-AT-COST ACT

In 1918 the Massachusetts legislature passed three notable acts in the development of the service-at-cost program with respect to the electric railways of that commonwealth. One of these provided for the operation of the Boston Elevated Railway for a period of ten years by a board of public trustees. This act stipulated that as a condition precedent to the acceptance of its benefits the company should provide for raising $3,000,000 in cash by the issuance of preferred stock. Of this amount $1,000,000 was to be set aside as a reserve fund, to be used "only for the purpose of making good any deficiency in income" or for reimbursing the commonwealth for moneys advanced to make good such deficiencies. This "reserve fund" performs a function similar to that performed by the "interest fund" in the case of the Cleveland Railway. It is the "barometer" by which the fluctuations in fares necessary to meet the cost of service are indicated. The theory of the Boston act is that the entire cost of service shall ultimately and without fail be collected from the car riders, but if, for any reason, deficiencies occur under the rates of fare in force at the time, these deficiencies are to be made up temporarily by advances from the state treasury, which in turn are to be collected from the municipalities as a part of their state taxes. Theoretically, the fares are to be increased from time to time, if necessary, until all such advances have been repaid and the reserve fund restored to the amount of at least $700,000 with all claims against it liquidated. As a matter of fact, however, in the actual working out of the service-at-cost plan, during 1918 and the first part of 1919, expenses grew so rapidly that revenues could not be made to overtake them, with the result that on June 30, 1919, when the first fiscal year under public operation came to an end, the reserve fund had been completely wiped out and an additional deficiency of $3,980,151 had been accumulated, to be made up temporarily by the state. It is still too early to forecast with certainty the ultimate financial outcome under the present 10-cent fare, but for the present, and possibly for the future, the original $1,000,000 put into the reserve fund is being used for the purpose of helping to make up deficits and not for what might be termed the legitimate purposes of current working capital. Obviously, it would be inadmissable in the case of a fully developed street railway system that has been in operation for a great many years permanently to capitalize current deficits. In the discussion of working capital, it is evident that a clear distinction should be made between moneys required for prepayments or for the payment of current expenses in advance of the collection of current revenues, and moneys that are used to make up deficiencies when the revenues derived from the sale of the service are insufficient to meet the cost of the service. If capital is being used to enable a street railway company to keep up appearances while it is running in the hole, it is important from every point of view that this fact should be known and the condition be corrected.

The second Massachusetts service-at-cost act of 1918 related to the Bay State Street Railway system, since reorganized as the Eastern Massachusetts Street Railway Company. This act also provides for the establishment of a reserve fund out of the proceeds of the sale of securities, the par value of which is recognized as a part of the capital value upon which a fixed rate of return is to be paid under the service-at-cost arrangement. The plan is based upon the assumption that the full cost of the service can be obtained from the fares, not merely in the long run but immediately, and no provision is made for making up general deficiencies by taxation, although the act authorizes any individual city or town to contribute a certain amount through taxes "for the purpose of preventing increases in fares or of reducing fares or of avoiding discontinuance or reduction of service." Thus far the Bay State system has not been able to earn the full cost of service, even under the 10-cent fare, and the $500,000 reserve fund has evidently been wiped out as completely and with much less hope of its restoration than in the case of the reserve fund of the Boston Elevated Railway. It is doubtful whether moneys advanced for the purposes of these so-called "reserve" funds, if used to make up deficits and not subsequently restored from earnings, can properly be designated as working capital. The valuation wags might perhaps be able to bring them under some such term as "anticipated development costs."

WORKING CAPITAL IN THE BAY STATE CASE

In the case of the Bay State company, we have the advantage of a previous valuation for rate purposes made by the Massachusetts Public Service Commission in 1916, in which the sum of $1,141,375 was allowed for working capital in a total of $39,104,340 fixed as the rate base. Here the engineers for the company had claimed an allowance of $1,424,097 for working capital, which they defined as including "cash on hand and money invested in stores and supplies." The figure used by them was based upon the average of these items during the preceding five years. The municipalities and other remonstrants in this case strongly urged that no such amount as claimed was needed or ought to be allowed for working capital. Their expert, Mr. Alton D. Adams, said (Mass. P. S. C. Rep. 1917, Vol. I, p. 26):

> "As I understand it, working capital is money that the stockholders or creditors of a concern must put into it and keep in the business in order to do the business, and I don't see that a concern like the street railway business that collects its income with much greater frequency than it pays its bills, collecting it daily and hourly, requires to have a substantial sum of working capital, and to my mind to allow a substantial amount of working capital in such a concern is merely to allow the company a return on a part of its operating expenses. The company gets from the public an income. A part of that income is for the express purpose of meeting the operating expenses and those operating expenses and the meeting of them is what working capital would be used for if it were used at all. And yet we find that part of the income which the public supplies is on hand ready to meet these operating expenses because it is paid to the company in the main before the expenses are incurred."

The company, on the other hand, claimed that it was necessary to have on hand continually "materials and supplies and other working assets." While admitting that less cash working capital was required than in the case of a gas or electric light company, the company denied that it was possible to depend entirely upon annual receipts. In its brief the company made the following arguments:

> "It should be borne in mind that during certain times the balances must necessarily run up anticipating interest payment and the company must be prepared to pay its interest on the interest day without embarrassment. Further, during certain seasons of the year, large expenditures are being incurred for construction and reconstruction work. The amount carried for construction purposes should be taken care of by an allowance for interest during construction, but the company should have on hand sufficient capital to finance temporarily the non-betterment part of its work. There are also many times when exceptional expenditures must be made. Take for instance, the expenditures incident to this present case."

In commenting upon the arguments of the respective parties the Massachusetts Commission said that the question was "not entirely open" for the reason that its predecessor, the Board of Railroad Commissioners, in a proceeding under an act of 1909, had allowed two of the predecessor companies of the Bay State system "to issue, all told, 9,945 shares of preferred stock at 115 to supply $1,141,375 for working capital." For this reason the Commission evidently felt itself debarred from passing on the merits of the controversy over working capital, and allowed the old amount to stand in the new valuation.

In the 1918 general act providing for service-at-cost by street railway companies, the Massachusetts legislature made it a condition of the acceptance of the act by any company that it should have provided a reserve fund of not less than 6 per cent nor more than 12 per cent of the gross earnings of the preceding year, but authorized the companies to make provision for the fund by the issuance of securities. This fund, like those in the Boston Elevated and Bay State cases, is to be used primarily for the purpose of making up deficiencies and to serve as a semi-automatic regulator of the fares.

CINCINNATI'S WORKING CAPITAL TAKEN FROM EARNINGS

Another notable service-at-cost franchise is the one negotiated between the city of Cincinnati and the Cincinnati Traction Company in August, 1918. This contract stipulates that the company "shall accrue from gross receipts a working capital fund in amount adequate for the usual purposes of such funds." This fund is to be accumulated at such times and in such amounts as shall be approved by the director of street railroads, a city official. The payments into this fund come after the payment of operating expenses, return upon capital and amortization of the company's "reducible debt." Thus it appears that under the Cincinnati plan, working capital is to be provided by the car riders, not as a part of the current cost of service, but as a surplus contributed in excess of the cost of service. In other words, the car riders are to supply the capital by the payment of higher fares than would otherwise be necessary, but are not to be required to pay the company a return upon this working capital which they themselves supply.

The Cincinnati plan also provides for a "reserve fund" which is to be used for the same purposes for which the interest fund in Cleveland and the reserve funds in Massachusetts are used. However, this fund is to be accumulated only in part by the sale of securities. The normal sum for the reserve fund is fixed at $400,000, of which $250,000 is to be furnished and capitalized by the company, the balance being built up out of the public's share of the surplus gross receipts. In case the property of the company is acquired by the city under the option provided in the contract, the purchase price is to be reduced by the amounts in the working capital fund and the reserve fund which shall have been accumulated out of earnings.

It is not necessary to follow further the special treatment of working capital in connection with the development of the service-at-cost idea. It is apparent that as a rule stores or materials and supplies on hand are treated either as a part of the physical property going to make up the principal item in capital value, or else are provided for by a special allowance for working capital. It is also apparent that as a rule the need for a cash fund of some kind or other, to be used as a reserve for deficiencies and as a semi-automatic rate regulator, is assumed. It would be interesting to examine in detail the balance sheets, and the record of cash receipts and cash expenditures, of each of these companies where the service-at-cost plan has been adopted, as in this way we might be able to prove or disprove the practical need, and throw light upon the theoretical necessity, for the special funds which have been set up and recognized as a part of the value upon which the car riders are bound to pay a fair return.

ANALYSIS OF CLEVELAND RAILWAY BALANCE SHEET

In the case of the Cleveland Railway, the balance sheet for June 30, 1919, set up by the accountants for the city street railroad commissioner, shows the cash on hand to be $372,516, the interest fund before the deduction of accrued liabilities to be $1,920,058, and the company's investments in liberty bonds and other securities outside of the interest fund to be $1,227,967, making a total of $3,520,541 of cash and outside investments for which cash has been paid. The balance sheet also shows that the amount of capital stock and bonds outstanding, plus the premium on capital stock, is $34,296,905, while the road and equipment account, plus net suspense accounts of $688,487, is only $32,120,099, indicating that $2,176,846 is available from the proceeds of the sale of stock and bonds to account for the cash and investment items shown, leaving $1,343,695 of cash investments presumably derived from revenues. This figure is increased to $2,221,947 by the balance sheet items for materials and supplies on hand which show an aggregate net amount of $878,252. It would appear from this balance sheet that the amount of cash derived from the sale of capital stock and bonds and actually available for the purposes of working capital in the case of the Cleveland Railway on June 30, 1919, was $2,176,846. It is obvious that this enormous sum of money was wholly unnecessary for operating purposes. Furthermore, this is proven by the fact that we find investments in United States Liberty bonds, certificates of indebtedness and war savings stamps and in Cleveland Railway bonds and certain other minor securities, amounting in the aggregate to $2,727,475. In fact these investments are $550,629 in excess of the amount furnished by the investors and available for working capital.

An examination of other items on the Cleveland Railway balance sheet throws further light upon the subject. The company's expenditures attributable to service not yet rendered or, in other words, its prepayments or advance payments, are as follows:

"Materials and supplies," net...	$878,251.79
"Prepaid accounts"...........	180,542.18
"Advance deposits"...........	3,781.40
"Work orders" and "shop orders"...................	45,676.76
Total....................	$1,108,252.13

In considering the need for working capital, items representing revenues due, but uncollected on account of service already rendered, should be added to the above, as follows:

"Accounts Receivable"........	$667,117.34
Total....................	$1,775,369.47

The items on the other side, going to offset the need for working capital supplied by the investors, are the following:

"Ticket float" (passenger revenues collected in advance)....	$234,881
Taxes accrued but not due......	1,009,678
Interest on capital stock and funded debt accrued but not due	91,798
Accounts payable..............	1,350,718
Rentals and miscellaneous charges accrued.....................	27,327
Total....................	$2,714,402

These figures indicate that on June 30, 1919, the Cleveland Railway Company should have had a cash balance of $939,033 derived from the car riders, and that all disbursements actually made prior to that date on account of the cost of service rendered or to be rendered had been made out of revenues derived from the car riders.

In this connection it should be stated that the detailed balance sheet which we have been analyzing strikes a balance between permanent liabilities consisting of capital stock and bonds, and permanent assets consisting of "road and equipment" and "investments other than the interest fund." This shows a remainder of $1,637,326 which is described as "current working capital." The investments referred to amount to $1,227,967. They are entirely extraneous to the railway plant and facilities devoted to public use. Upon the entire amount of the outstanding capital stock and bonds, the company was paying from the interest fund the return specified in the service-at-cost franchise. It appears, therefore, that the car riders of Cleveland were paying interest upon some $2,865,293 of "capital value" not invested in permanent railway assets. In effect, stock had been sold in advance of the need of capital for railway extensions and improvements. This stock, however, was immediately recognized as a part of the capital value and the proceeds were used by the company in part for the purchase of Liberty bonds at a lower rate of interest than the rate which the stockholders were receiving from the public.

INTEREST FUND SHOULD BE ZERO

Our analysis of the Cleveland balance sheet shows that so far as working capital requirements are concerned, there was absolutely no need for any part of this cash derived from the sale of securities, inasmuch as the funds actually used for working capital were accumulated out of earnings in advance of disbursements attributable to the cost of service. It even shows that the $500,000 originally set aside out of capital for the interest fund was wholly unnecessary and that, under a service-at-cost arrangement, where the current revenues are sufficient to cover the cost of service, the normal condition of this fund should be zero instead of $500,000, or any other positive amount. The "condition" of this fund is a matter of bookkeeping, and for the purpose of automatic rate regulation a range from minus $200,000, indicating a need for higher fares, to plus $200,000, indicating the feasibility of lower fares, would be just as effective as the present range from plus $300,000, the low limit, to plus $700,000, the high limit. On June 30, 1919, when the theoretical "condition" of the Cleveland interest fund was $838,559, the actual amount of the fund was $1,920,058 of cash and its equivalent, the difference between these two sums being represented by taxes and interest accrued but not due, charged against the fund. Thus it appears that on June 30 the sum of $1,081,500 accumulated out of revenues, was available as a balance in cash or its equivalent on account of the deferred claims attributable to the service already rendered. On December 31, 1919, after the usual liquidation of accounts at the close of the fiscal year, the corresponding amount was still over $500,000.

WORKING CAPITAL AS SEEN BY REGULATORY COMMISSIONS

We may now turn to the treatment by the regulatory commissions of working capital for street railway purposes. In most cases street car fares originally were fixed by legislation or franchise ordinances, and for that reason the public service commissions of the various states were slow in assuming or having thrust upon them jurisdiction over them. Hence, the valuation of street railway properties in connection with rate proceedings is a comparatively recent development.

THE ORIGINAL MILWAUKEE FARE CASE

The outstanding pioneer case of street railway valuation and fare fixing by a state commission is *City of Milwaukee* v. *the Milwaukee Electric Railway and Light Company*, decided by the Railroad Commission of Wisconsin, August 23, 1912. As introductory to the discussion of the allowance to be made for working capital in this case, the Commission said (10 W. R. C. Rep. 157):

> "It is conceded that the respondent company is entitled to an allowance for working capital in order to economically carry on its business. The only question in dispute is the amount of such an allowance. It is apparent that such an amount is dependent largely upon the nature of the business. The electric railway is unlike the water, gas and telephone utility, in that it has no monthly bills but receives a large portion of its transportation revenues daily. The electric railway also has the advantage of selling a part of its transportation service in advance in the form of blocks of tickets or mileage books. The money so received is at the company's disposal as working capital prior to the time when it is necessary for current expenses."

In this case counsel for the city of Milwaukee took the position that the monthly average of current operating expenses would be adequate allowance for working capital, and upon this basis suggested $150,000 as approximately the right amount. Prof. Mortimer E. Cooley of the University of Michigan, testifying on behalf of the company, estimated that, in addition to stores and supplies, the working capital should include the average amount of the monthly pay rolls plus the average amount of the monthly vouchers, and upon this basis the working capital for 1906 would aggregate $263,270 and for 1910 $296,290. Mr. John I. Beggs, who had for many years been in charge of the property, testified that he had not found it necessary to maintain a working capital fund in view of the fact that reserve funds were being used for such purposes. His estimate of what the working capital should be was $250,000 in addition to the average amount of stores on hand. The Commission calls attention to the fact that in 1910, "the amount of unredeemed tickets not yet lifted by conductors aggregated $81,575," and that "the excess of current assets over current liabilities for the same year aggregated $591,069." However, this latter figure related to the company's combined railway and lighting business, and the Commission expressly notes "that the lighting business required more working capital per dollar of income than the electric railway." The Commission states that "by far the largest portion of working capital is required for the pay roll." At that time employes were paid by the company every fifteen days and the semi-monthly pay roll aggregated $52,566. The Commission then calls attention to the fact that "considerable working capital is necessary to cover property extensions." It states that the capital investment for the 10-year period ending with 1910 had increased $3.74 for each dollar of increase in annual gross earnings, and then remarks:

> "Not all of this extension can be covered by utilizing credit reserves and only a portion is properly financed through the issue of additional bonds. This fact is undoubtedly entitled to considerable weight. Much of this new construction will probably relate to service betterments ordered by the commission, which in their nature are not revenue producing."

The Commission states that the amount of stores and supplies on hand for railway purposes on January 1, 1910, was $376,360, which included "material necessary for a reasonable amount of new additions." In the summary of its findings the Commission says:

> "The working capital should not exceed the cost of the materials and supplies and the cash ordinarily carried for this purpose, which amounts to about $350,000 and $150,000, respectively. In fact, an amount that is somewhat less than this would probably be sufficient."

The total rate base found by the Commission was $10,300,000, from which it appears that the allowance for working capital, including both materials and supplies and cash, was about 5 per cent of the total rate base.

THE WISCONSIN COMMISSION GETS MORE LIGHT

The development that has taken place in the theories of working capital with respect to street railways will be clearly brought out by a comparison of the Wisconsin Commission's decision in the original Milwaukee fare case just cited, with certain subsequent decisions. In the case of *Superior Commercial Club* v. *Duluth Street Railway Company*, decided November 13, 1912, the Commission gave evidence of having seen considerable new light, as will be seen from the following discussion of working capital taken from its opinion (11 W. R. C. Rep. 21):

"In regard to the matter of working capital, petitioner's brief states that the method of doing business by respondent is on a cash basis and that current expenses can always be paid leaving a balance on hand. Witness for the company admitted that not much working capital was required excepting for construction, and that for this purpose about $25,000 was considered adequate. A study of operating conditions obtaining on street railways discloses that they require considerably less working capital than those utilities selling their product on a monthly basis. Especially is this true when traction companies sell tickets in advance. The cash on hand from such tickets unredeemed is almost sufficient in some cases to supply the necessary funds for working capital. However, it is often to the benefit of the railway, as well as to the public, that funds are always at hand with which advantage can be taken of low current prices for materials, especially in view of the short duration of the season when renewals and betterments can be undertaken. An examination of respondent's reports to the Commission pertaining to materials and supplies, and facts found in other sources, indicate that for conducting the Superior division of company's property an allowance of some $10,000, in addition to about an equal sum for stores and supplies, seems adequate."

In this case the Commission fixed upon $700,000 as the rate base, and it will be seen, therefore, that the $20,000 allowed for materials and supplies and cash working capital was a little less than 3 per cent of the total. It is also to be noted that the Commission in both the Milwaukee case and the Superior case gave favorable consideration to the demand for working capital for extension purposes, although it is a well-established rule of valuation that interest during construction should be allowed as an overhead expense in connection with the construction of the physical property. It follows that if interest during construction is properly chargeable, either in a reproduction cost appraisal, or in the capital account where actual cost is accepted as the basis for determining value, a separate allowance for working capital for construction purposes involves a duplication of interest charges to the disadvantage of the fare payers.

THE LA CROSSE AND RECENT MILWAUKEE DECISIONS

Six years later, in the matter of the application of the Wisconsin Railway, Light and Power Company for authority to increase its rates in the city of La Crosse, decided September 12, 1918 (21 W. R. C. Rep. 734), the Wisconsin Commission took the position that "practically all allowance for working capital should be excluded, since the revenues derived from the operation of a street railway property are paid in advance." In this case the language used by the Commission is not sufficiently explicit to indicate whether or not the term working capital as here used is intended to include "materials and supplies," but apparently these were included in the appraisal of physical property used as a basis for the decision. The Wisconsin Commission's present policy with respect to working capital is even more clearly shown by its treatment of the subject in its most recent decisions in the matter of the valuation and rates of the Milwaukee Electric Railway & Light Company, handed down October 30, 1919, and January 30, and June 24, 1920. In each of these three decisions the Commission made an allowance for materials and supplies, but none for "cash working capital."

THE ILLINOIS COMMISSION'S CASES

Turning to other Commissions, we find that different rules and no rules have been followed in various street railway rate cases decided in recent years. For example the Illinois Public Utilities Commission, in the case of the Chicago, North Shore and Milwaukee Railroad Company, decided September 5, 1917 (P. U. R. 1918A, 431), fixed $100,000 as "a proper amount for working capital, including amounts invested in materials and supplies," with a total rate base of $5,100,000. The working capital allowance figures out at approximately 2 per cent of the total. It should be stated, however, that in this case the valuation submitted on behalf of the company contained the item of $61,395 of materials and supplies, and that the company made no request for an allowance for cash working capital. On the other hand, the assistant engineer of the Commission also submitted a valuation, based upon an inventory taken at a different time, showing materials and supplies on hand amounting to $136,374, of which a considerable amount was in stock to be used for additions and betterments. He also allowed the sum of $100,000 for cash working capital, but gave no details as to how he arrived at the amount. It will be seen, therefore, that in this particular case, although the Commission was comparatively conservative in its working capital allowance, it went somewhat beyond the company's own claims. In discussing the matter, the Commission said:

> "It is well recognized that a railroad company requires comparatively small working capital. Unlike most other public utility companies, it sells its services for cash in advance, and the receipts are usually available within a few hours after they have been collected. There is thus a constant stream into the vaults of the company of a volume that can be closely predetermined, enabling the corporation to gauge its disbursements to suit the normal expenditures as they arise. However, it is a well-recognized business principle that a concern must constantly have a bank balance sufficiently large to retain its credit unimpaired. The exact amount of such a balance is not capable of accurate determination, and it must be fixed more by the exercise of business judgment than by the use of a mathematical formula."

In the matter of the Rockford City Traction Company, decided July 22, 1918 (P. U. R. 1918F, 840), the Illinois Commission expressed the opinion that "the sum of $20,000 will sufficiently care for petitioner's needs for cash working capital and necessary materials and supplies." The company's appraisal included an amount of $40,000 for these purposes, but the Commission, commenting upon this claim, said:

> "A street railway company receives payment in advance for its services, and the daily collections will ordinarily care for expenditures as they become necessary. So well standardized are the articles entering into a street railway property, that requirements can usually be foretold with considerable accuracy, and can be ordered as needed, thus removing the necessity of keeping them in stock. For these reasons neither a large cash working capital nor a considerable quantity of materials and supplies is required for a street railway property."

In this particular case the Commission showed that the items of "cash," "miscellaneous accounts receivable," and "materials and supplies," on December 31, 1917, as shown by the company's balance sheet, amounted to $6,828, and it was in consideration of this fact in conjunction with the company's claim for an allowance of $40,000, that the Commission hit upon the figure of $20,000. Evidently there was very little "science" in the decision of this case.

In another street railway case, in the matter of the East St. Louis Railway Company, decided April 10, 1919 (P. U. R. 1919D, 40), the Illinois Commission allowed $25,000 for materials and supplies and apparently allowed an additional $5,000 for cash working capital. Here the company had claimed an allowance of $100,000 for these two items. The Commission did not clearly set forth the basis upon which it reached its conclusion in this case.

In still another case, in the matter of the Tri-City Railway Company, decided July 9, 1919 (P. U. R. 1919E, 845), the Illinois Commission makes an allowance for working capital. It finds that to care for the company's "needs in the way of materials and supplies used currently in its business," the sum of $45,000 will be required, and that to provide proper cash working capital the additional sum of $17,000 will be required, making $62,000 in all, in a total rate base of $2,900,000, or a little more than 2 per cent. The company claimed a total of $79,600. In this case the Commission says:

> "As heretofore frequently pointed out by this Commission, the cash-working capital needs of a street railway company are usually not so great as are those of other utilities, such as gas, electric or water, for the reason that it receives pay in advance for the services rendered. Further, many needs of the company can usually be anticipated to a considerable extent and the credit of the company be invoked in obtaining the necessary articles."

It will appear from the cases cited that the Illinois Commission, while recognizing theoretically the difference between the working capital demands of a street railway company doing a cash or cash-in-advance business, and the corresponding demands of other utilities where monthly collections after the service is rendered are the rule, still clings to the fallacy that the average amount of materials and supplies and cash on hand carried by a company is in some sort a measure of the working capital which should be included in the rate base. The Commission's arguments tend to show that the materials and supplies, as well as the cash on hand, are supplied by the fare payers; yet the Commission evidently hesitates to draw the logical conclusion that a street railway company, under normal conditions, does not need and is not entitled to an allowance for working capital furnished by the investors, for the very good reason that no such working capital is in fact furnished by them. It will be remembered that in the first Milwaukee fare case Mr. Beggs, president of the company, admitted that he had not found it necessary to maintain a cash working capital fund.

THE MISSOURI COMMISSION'S CASES

The Missouri Public Service Commission, in the matter of the Joplin & Pittsburgh Railway Company, decided December 31, 1918 (P. U. R. 1919B, 366), fixed upon $50,000 as "a fair allowance for system working capital." In arriving at this figure, it considered two methods of determining working capital. The first was by an examination of the balance sheet to find the amount of the "net current assets," which in this case were approximately $50,000. In referring to the second method the Commission said:

> "As the primary purpose of working capital is to meet expense, the necessary working capital may be computed as one-twelfth of the annual operating expenses plus stores and supplies."

On this basis the figure arrived at as of December 31, 1917, would have been $54,910. However, the Commission decided to take $50,000 as the proper sum in view of the fact that "the company's business is done principally on a cash basis." One-twelfth of the annual operating expenses amounted to $40,710. It would seem evident that in knocking off $4,910 in consideration of the fact that the money required for the monthly expenditure of $40,710 was paid to the company in advance by the car riders, the Commission was not unduly inconsiderate of the interests of the company.

In the matter of the Kansas City, Clay County and St. Joseph Railway Company, decided January 15, 1920 (P. U. R. 1920B, 60), the Missouri Commission made an allowance of $125,731 for working capital, including stores and supplies. In an earlier proceeding affecting the same property, the Commission, by an order dated December 5, 1914, had allowed only $30,000 for working capital. In its opinion the Commission states that it "was fully warranted in fixing the allowance for working capital at $30,000 upon the application and evidence before it at the time of the former report," but that "actual experience has since demonstrated that an additional allowance should be made in the sum of $95,731." The total allowance was determined upon the basis of the testimony of the Commission's chief engineer and the railway company's auditor, who based their estimate of working capital "on the average monthly differences between current assets and current liabilities, plus stores and supplies, plus cash on hand and cash in the bank." A monthly average for a period of eighteen months was taken. "This method of ascertaining the adequate amount of working capital," says the Commission, "is commonly used by valuation engineers and authorities." The Commission does not explain just what is included in "current assets" and in "current liabilities," but the inference is that these assets were greater than these liabilities and that the assets referred to did not include cash and stores and supplies which ordinarily are considered as a part of current assets. In any case, the Missouri Commission, like the Illinois Commission, is apparently laboring under the delusion that the amount of cash on hand measures a part of the allowance for working capital to be included in the rate base. Perhaps it should be added that in the case last cited the Commission was dealing with an electric interurban railway, but I find nothing in the opinion to indicate the relative importance of the passenger revenues, which are always collected in advance or at the time when the service is rendered, and the freight revenues which are sometimes collected later on.

THE UTAH COMMISSION SPEAKS

In the matter of the Utah Light and Traction Company decided January 15, 1920 (P. U. R. 1920B, 262), the Utah Public Utilities Commission made an allowance of $199,458 for working capital, in a total rate base of $8,468,279, or about 2⅓ per cent. This was the exact amount claimed by the company. In discussing the matter, the Commission said:

> "The working capital of a utility should represent a sum ample, under ordinary circumstances, to carry on the business. There should be sufficient funds available to provide for prompt payment of operating expenses and maintain the credit of the company. Some Commissions have said this should in general be a sum sufficient to bridge the gap between outlay and reimbursement, it should include such stock, materials and supplies as is necessary to enable the company to make repairs and minor replacements chargeable to operation without unreasonable delay or expense, and to meet ordinary operating contingencies and emergencies.
>
> "The stock of repair and renewal parts and supplies that it is necessary to have on hand varies from time to time, depending upon current demands and upon facilities of the company for replenishing the stock.
>
> "In considering a utility of this nature, it must be borne in mind that the income of the company consists of daily cash receipts. For the sale of tickets, cash is received by the company in advance of service. For the reason that cash is received daily, a comparatively small working capital only is necessary."

Thus the Utah Commission, like others that have been quoted, recognizes that the amount of working capital required by a street railway company doing a cash business is less than the amount required by other utilities doing a credit business. But like most of the others, this Commission apparently fails to see that the revenues collected in cash from day to day, and sometimes partly in advance, on the average represent the entire amount which the company will ever get from any source in liquidation of the cost of service rendered from day to day, and that, therefore, the use of capital by a going concern to pay operating expenses is inadmissible from the point of view of sound financial policy. Particular attention should be called to that portion of the definition of working capital cited by the Utah Commission where it is said that in general this item should be "a sum sufficient to bridge the gap between outlay and reimbursement." In most of the specific cases to which I have referred, including this Utah case, the commissions treat the matter as if the definition were reversed and the item were to include the sum sufficient to bridge the gap between revenues received and moneys paid out, for it is only upon this basis that the Commissions could justify themselves in accepting cash on hand as in any respect a measure of working capital contributed by the investors.

THE DISTRICT OF COLUMBIA COMMISSION'S THEORIES

In the matter of the valuation of the Washington Railway and Electric Company and its subsidiaries, decided September 4, 1919 (D. C. P. U. C. Order No. 339; see P. U. R. 1919F, 938), the Public Utilities Commission of the District of Columbia made an allowance of $235,000 for materials and supplies as of June 30, 1919, and $295,000 for cash working capital as of the same date, making a total working capital allowance of $530,000 in a rate base of $16,106,368. As will be seen, this figures out a little more than 3 per cent. In this case the Commission's findings were based in part upon a physical valuation made by C. L. Pillsbury as of July 1, 1914. Mr. Pillsbury's valuation had been compared with the valuation submitted by the company's engineers, the J. G. White Engineering Corporation, and as a result an agreement had been entered into between the Commission and the company as to the cost of reproduction on the major portion of the property involved. By this agreement materials and supplies were put in at $187,863, but on account of the subsequent increase in the company's business and the advance in prices, the Commission allowed as the fair value for materials and supplies as of June 30, 1919, $235,000. To this was added $295,000 for cash working capital, representing the amount used in the engineering reports based upon one-twelfth of the operating expenses, with taxes omitted. In finding the cash working capital in the original appraisal as of July 1, 1914, the Commission adopted Mr. Pillsbury's figures, which were derived by taking one-twelfth of the annual operating expenses and real property taxes and then adding small amounts for property extensions. In this connection, the Commission said that it had reached its conclusions, "having taken into account the fact that in the instant cases, the street railway fares were either all paid at the time of the ride, or in advance through the purchase of tickets, and the fact that the properties were not then growing to any great degree."

In the matter of the valuation of the Capital Traction Company decided by the District of Columbia Commission on the same date, September 4, 1919 (P. U. R. 1919F, 779), an allowance of $175,000 for materials and supplies and of $200,000 for cash working capital, in a total rate base of $14,270,495, was made. These results were reached by the same processes as in the Washington Railway and Electric case.

It is noteworthy, however, that in the Capital Traction case, the Commission referred to a claim made by the company to the effect that the cash working capital as of June 1, 1914, was $275,000, basing the claim upon the fact that the Commission's accountant, in his study of historical costs, found this amount as representing the excess of current assets over current liabilities averaged over a period of years. This claim was rejected by the Commission in favor of Mr. Pillsbury's method by which cash working capital was figured as we have already seen, comprising an average month's operating expenses and real property taxes plus a small amount for extensions.

DEAN COOLEY'S VALUATION IN THE JERSEY CASE

I shall now take up the analysis of the subject of working capital in connection with the valuation of the property of the Public Service Railway Company of New Jersey, in proceedings before the Board of Public Utility Commissioners of that state, first instituted in 1918. The Public Service Railway system is one of the biggest and most important street railway systems of the country, comprising as it does about 800 miles of track and rendering local transportation service in no less than one hundred and forty-one municipalities. From the point of view of street railway revenues, the group of communities served by the Public Service Railway Company constitute the fifth most important transportation area in the United States, being surpassed only by the New York City, Chicago, Philadelphia and Boston areas. A physical valuation of the railway property, made by Prof. Mortimer E. Cooley, Dean of the Colleges of Engineering and Architecture of the University of Michigan, President of the American Society of Mechanical Engineers, and one of the great names in the valuation field, was introduced in evidence on behalf of the company. A summary of Dean Cooley's appraisal shows that after having made his inventory, fixed his unit prices, established the base cost, and added overheads, he included as the final element in his "appraisal of physical properties" two items for working capital, one of $693,403 for "materials and supplies" and the other of $929,404 for what has been frequently referred to in this study as "cash working capital." The two items together, amounting to $1,622,807, represent about 2 per cent of the total reproduction cost new of the physical properties, as appraised by him. In explanation of the basis for these allowances, Dean Cooley said:

> "Experience has shown that in general these items are likely to be more nearly correct if taken directly from the company's books. That is particularly true if, as in this case, the books are well kept, and frequent inventories are made of materials and supplies on hand. The amount used in this appraisal was taken from the following analysis furnished by the company."

The item of materials and supplies was made up of the average monthly balance in the materials and supplies account over a period of five years, with the addition of materials in shops and car houses shown by inventory at the time of the appraisal and certain minor items such as badges, buttons, rule books, etc., in the hands of the company's employes. The item of cash working capital was made up by taking an average for twelve months of the four items "receipts," "other current assets," "accounts receivable" and "prepayments" and deducting therefrom the "accounts payable."

CASH LYING IDLE IN THE BANK

The Cooley appraisal was introduced as evidence of the value of the property for rate purposes in a proceeding before the Utilities Board in 1919. In explanation of how he got the item of cash working capital, Dean Cooley, upon cross-examination, said:

> "We went to the books of the company and took an average over a certain period of time of the actual money that they held idle in order to conduct the business of the company, . . . held idle in the sense it brought no interest, they got no return on it. . . . Every business requires a certain amount of money to take care of its daily business and that money is in a checking account, upon which no interest is received. It is necessary to the conduct of the business, and it should have its interest and, therefore, it is put into the capital. If you did not put it into capital it would be a contribution."

In answer to the question as to where this money came from, and as to whether it came out of the rates, he replied:

> "Not when it starts. This money goes into capital; it is before you get started; it is the money that is held permanently. It is not built up out of earnings."

Asked whether he meant that the item of $929,403 had actually been held from the beginning, permanently, for working capital purposes, he replied:

> "No, not at all. I mean, that such part of this $929,000 which was the amount in 1915, . . . in proportion to the magnitude of the companies, has been held idle since the companies were organized. It has grown to that point, and we reproduce this property in 1915 and this is the amount of capital that was necessary to conduct the business of this company when we made the appraisal in 1915, whatever may have been its amount in the past. . . . This is a reproduction of the bare bones of the property in 1915, and it takes up to the point of starting but it has not started. Now, you cannot start it without having money, working capital, with which to pay the bills that come in from day to day."

Asked whether the cash referred to was "kept specifically as working capital, or just a sum of money that happens to be on hand," he replied:

> "It was the sum of money that was on hand at the various banks with which this company does business, lying idle."

Asked just how this money was used for working capital, he said:

> "Wages and the bills, the payment of accounts that the company are required to pay, all those different things that you have to have working capital for. There are thousands of different things that they have to pay out their money for, and if you did not have that money available, they would have to go to the bank and borrow it, and if they went to the bank to borrow it, they would have to pay interest on it. We put it in here because of that fact. . . . I think the important point is that this is money, idle money that should bear a return to someone, and if you went to the bank to borrow it, you would have to pay a return. . . . Let me say again: if you are starting this company after you have got it built, you have got to have money to pay your bills. You have not earned a dollar. . . . You have got this property built, you have not turned a wheel, you dare not turn a wheel until you have the necessary stores and supplies to make replacements, do the things necessary to keep the property going. You have got to spend money before you turn a wheel. You have got to have money to pay wages before you turn a wheel, but at the moment you begin to turn the wheels you have not earned a cent. All that money you have got there whether it is the amount I have stated or not, just for the completed property, all that money, or what corresponds to the $929,000 plus, and the $691,000 of stores and supplies, the proper part of that money has got to be on hand when you begin to turn the wheels of this property, and you have got to borrow it, and if you borrow it, you are going to pay interest on it. Now you have not earned a dollar."

In connection with this testimony, attention should be called to the fact that the principal item in working capital, as indicated by Dean Cooley's appraisal report in this case, was not "cash on hand" but "one month's receipts," with nothing to indicate whether they were on hand or had been disbursed.

DR. JACKSON'S THEORIES

Subsequent to Dean Cooley's testimony Dr. Dugald C. Jackson, Professor of Electrical Engineering in the

Massachusetts Institute of Technology and for many years head of the engineering partnership, D. C. and Wm. B. Jackson, was called as a witness for the Utilities Board. On cross-examination he was asked by counsel for the municipalities to explain generally his view of working capital and his method of treating it. In the course of his reply, Dr. Jackson said:

> "Some utilities get paid in advance for their service, some get paid afterward, some get paid very promptly after they render the service, very promptly after the end of the month, and some don't get paid for sixty days after the end of the month, and consequently, one has to consider the situation.
>
> "In the case of a street railway, generally speaking, it gets paid more or less in advance. A man pays his fare when he gets on the car, which is distinctly in advance, or he may pay it when he gets off the car, which is pretty near the same thing. In other words it is a cash transaction. You don't have to wait for thirty days or sixty days to get your money; you make a transaction with the public and he pays the cash. You give him service and he pays for it right then and there. . . . The cash I should say for a street railway, that cash which is the minimum, might be the monthly revenue, or a minimum, say, of the monthly expenses; they ought to have an average of that much cash at the minimum. Two months' expenses would be reasonable I should think. You could put it in between those two for questions of difference of opinion. In my opinion it pays; the people riding ought to be willing to see a company have ample cash on hand."

Here again, running through Dr. Jackson's testimony, we find the same fallacies that run through so many commission decisions. He assumes that the cash required by a street railway company with which to purchase materials and to meet the weekly or monthly pay rolls is working capital furnished by the investors, and a part of the rate base. He admits that a street railway company is paid for the service it renders at the time of rendering it, if not in advance, but he does not draw the conclusion from this fact that is inevitable when it is coupled with the further fact that the major portion of a street railway company's expenditures are deferred until a considerable time after the service is rendered and the revenues collected. Clearly, everything depends, first, upon a correct definition of working capital and, second, upon a correct analysis of the facts in each particular case where a public utility's property is being valued for rate purposes.

THE MONEY SUPPLIED BY INVESTORS FOR DISBURSEMENTS IN ADVANCE OF COLLECTIONS

In the New Jersey case, as a witness for the municipalities, I defined working capital as follows:

> "It is the money which the investors in a public utility must put in, in addition to the money represented by fixed capital, in order to enable the utility to pay its expenses in connection with the service rendered, to the extent that it is compelled to pay such expenses in advance of the collection of its revenues from the users of the service."

I pointed out that when a company is starting off new it unquestionably has to have some materials and supplies on hand and that in part they must be paid for in advance; also that there are likely to be certain other items paid in advance, but that as time goes on and the enterprise becomes a fully established going concern, the revenues derived from the service will accumulate on account of the large amount of deferred payments so that the working capital originally furnished by the investors, or borrowed temporarily from the banks, can be paid back out of current revenue, and a handsome balance be maintained sufficient to meet all the needs of the company as they arise.

As I defined it, working capital would be limited to money furnished by the investors. Undoubtedly, this should include any earnings of the company to which the investors are entitled but which the company has withheld for use as working capital. It cannot be said, however, that cash for interest and dividends, accrued but not yet due under the terms of the company's mortgages, or under the usual practice with respect to the declaration of dividends at the end of the period during which they are earned, is money supplied by the investors which they are entitled to capitalize against the public in case it happens to be temporarily used for working capital without any postponement of interest and dividend payments beyond the dates when they are normally due.

The claim is made that working capital is needed to provide against emergencies and to maintain credit as well as to provide for current needs. It may readily be admitted that a public utility should have a reserve with which to meet emergencies. Under the established canons of regulation a public service company is entitled to charge rates that are adequate to pay operating and maintenance expenses, taxes, depreciation and return upon capital, and to provide a sufficient reserve to stabilize the finances of the enterprise and protect both the public and the company from the distress of interrupted or seriously impaired service. An operating reserve or surplus built up out of earnings in excess of a fair return upon the investment surely ought not to be capitalized against the very consumers who have paid higher rates for the purpose of furnishing this reserve as a necessary part of the cost of adequate, convenient and safe service. In other words, an operating reserve, properly conceived, is not working capital in the sense that this term is used in valuation and rate cases.

IS WORKING CAPITAL NECESSARY TO MAINTAIN CREDIT?

With respect to the claim that a cash balance in the nature of working capital must be maintained in order to preserve the company's credit, the question arises whether it is necessary for a company to carry a cash balance of borrowed money in order to give it the credit necessary if it desires to borrow more money. If a street railway company is earning the full cost of the service it renders, including a fair return upon the investment and a reserve for emergencies, the problem of credit will take care of itself. Indeed, when a company is earning the full cost of service and is meeting all its current obligations promptly, it needs only a comparatively small reserve for unforeseen emergencies; for its credit will be good, and one of the principal uses of credit is in meeting emergencies. To the extent that a cash balance is necessary for the preservation of credit, it is clear that cash derived from the car riders and held on deposit is as effective a means of supporting credit as cash furnished by the stockholders or cash borrowed from the people from whom the company may wish to borrow more. It seems clear that a street railway, when it has become an established going concern, must depend for its credit and for its ability to meet its current obligations, not upon working capital furnished by the investors, but upon earnings that actually cover the entire cost of the service. Under all ordinary circumstances, the money accumulated from revenues, and not yet spent for deferred operating expenses and fixed charges, will much more than offset the amount of necessary prepayments, whether for materials and supplies to be used in maintenance and operation or for other items which may have to be paid in advance.

ANALYSIS OF PUBLIC SERVICE RAILWAY BALANCE SHEET ITEMS

In order to ascertain just what relation obtained in the case of the Public Service Railway between the cash receipts from service rendered or to be rendered and the cash disbursements in payment of the cost of service rendered or to be rendered, we made a careful analysis of the company's monthly balance sheets for the year 1918. Taking the monthly averages for those items on the balance sheets chiefly affecting the matter of working capital, we derived the following results:

Items Representing Prepayments Chiefly Attributable to the Cost of Service

	Monthly Average
Materials and supplies	$687,822
Bills receivable	829
Accounts receivable	302,082
"Other special deposits"	11,169
Prepayments	95,877
Total	$1,097,779

Items Representing Deferred Payments Chiefly Attributable to the Cost of Service

	Monthly Average
Taxes accrued	$898,388
Interest accrued	449,790
Other accrued liabilities	645,494
Other accounts payable	1,035,809
Casualty and insurance reserve	137,087
Total	$3,166,568
Excess of deferred payments over prepayments	$2,068,789

Thus it appears that the Public Service Railway Company, at the end of each month during 1918, had on the average $2,068,789 more of deferred payments than of prepayments. This, according to the most frequently used definition of working capital, would be working capital in red figures. Subject to possible minor modifications as a result of a detailed analysis of the several items included on one side or the other in the above calculation, the result means that the car riders of New Jersey kept the Public Service Railway Company supplied with more than $2,000,000 of collected revenues in excess of the company's paid expenses, including in the latter the entire amount of the materials and supplies on hand whether held for maintenance or for construction purposes.

A further analysis of the materials and supplies account revealed the fact that on the average during the year 17.5 per cent of the stock used was for construction purposes and 82.5 per cent for maintenance purposes. This raises the question as to whether or not stores held for construction purposes should be considered in a determination of the company's legitimate demand for working capital. As previously noted, the Wisconsin Railroad Commission, in one or two cases, specifically allowed in working capital the necessary materials and supplies for small additions and extensions. The same is true of the District of Columbia Commission in certain cases. On the other hand the Illinois Commission in certain cases where gas and electric companies were involved (*Piercy* v. *Citizens Gas, E. & H. Co.* P. U. R. 1919B, 426; *Belleville* v. *St. Clair County, G. & E. Co.*, P. U. R. 1916B, 39), has taken the ground that materials and supplies for construction purposes must be eliminated from working capital, and the Colorado Commission has rendered a similar decision in the case of a power company (Re Western Colo. Power Co., P. U. R. 1918E, 620). If the rulings of the Illinois and Colorado Commissions were accepted, the monthly average of materials and supplies on hand in the case of the Public Service Railway Company during the year 1918 would be reduced from $687,822 to 82.5 per cent of that amount, or

$567,453, in a determination of working capital requirements.

Furthermore, an analysis of the materials and supplies account showed that not all of the stores on hand at any particular time were paid for. On the average, through the year 1918, 22.1 per cent of this account represented unpaid bills, leaving a net amount of $442,046, as the average amount of materials and supplies on hand held for maintenance purposes and paid for. A deduction from the materials and supplies item on account of the percentage of unpaid bills would, of course, be offset in a study of the balance sheet by a corresponding amount included in the accounts payable on the other side.

ANALYSIS OF CUMULATIVE CASH RECEIPTS AND DISBURSEMENTS

In order to check the results obtained from the comparison of the balance sheet items, we analyzed the company's daily cash receipts and cash disbursements during the entire year 1918. For the purpose of this analysis, we assumed that the company commenced operation on the first day of January with its business fully developed, but without any obligations or accumulated revenues attributable to service preceding that date. Assuming that the company did not have a penny in its treasury at the start, we accumulated the cash receipts derived from service rendered subsequent to January 1, but left out of consideration entirely the following items:

(1) Cash receipts for capital purposes whether from the sale of permanent securities or from other sources;

(2) Cash receipts representing payment for services rendered prior to the beginning of the year;

(3) Revenues earned during the year year but not yet collected.

In this way the company's cash receipts were accumulated from zero at the beginning of business on January 1 to $20,679,461 at the close of business December 31. This amount represented the actual cash furnished to the company by its patrons during the year for service rendered during the year.

On the disbursements side, it was necessary to estimate the amount of prepayments as of January 1, 1918, properly attributable to service to be rendered on or subsequent to that date. In order to give working capital the benefit of the doubt we determined not to make any deductions from the materials and supplies account either for unpaid bills or for stores held for construction purposes. Accordingly, we took $800,000 as a reasonable allowance for the initial working capital needed at the assumed commencement of operation January 1, 1918. The accumulation of cash disbursements started, therefore, not with zero, as in the case of the receipts, but with $800,000. In the disbursements we included all moneys paid out for labor and materials and for taxes, rentals, interest and other expenses attributable to the service rendered subsequent to the beginning of the year. We did not include the cash disbursed for construction purposes, nor cash disbursed in settlement of liabilities for service rendered prior to 1918, nor cash paid out of the depreciation reserve for replacements. The curve representing cumulative cash receipts, starting at zero, $800,000 behind the disbursements, mounted rapidly until on February 13 it crossed the curve representing cumulative cash disbursements and from that date on remained continuously above it. The surplus of cash receipts over cash disbursements (including the $800,000 of prepayments) was about $1,200,000 on June 30, and by December 31 it was approximately $1,970,000.

These figures might even be interpreted as indicating that the New Jersey fare payers would be entitled to a deduction of nearly $2,000,000 from the rate base on account of the surplus cash supplied by them in advance of its being needed for current expenses. But before the public undertakes to turn the tables on the company in this fashion certain qualifying facts should be considered. In our analysis we did not count moneys appropriated to the depreciation reserve as cash disbursed. Neither did we take account of moneys paid out of the reserve for replacements. At the beginning of the year 1918, the company had $245,783 accumulated in its reserve, but during the year it paid $335,278 out for replacements. Thus it appears that the cash available in excess of actual working capital needs was $89,495 less than above indicated. Also, it was brought out in the company's rebuttal testimony that under the Public Service Railway Company's special operating conditions, it is "several days" before cash fares collected in remote parts become available in the company's checking accounts in Newark. It was also shown that at the close of the year 1918 the cash surplus would have been greatly reduced if certain very large sums had been paid out for taxes late in December when the taxes fell due. Undoubtedly, the company was not in first-class financial condition during 1918, and some of its disbursements may have been deferred longer than would have been the case under more normal conditions. Moreover, it is doubtless true that a street railway company ought to have a reasonable cash balance for minor emergencies. When all these things are taken into consideration, it seems reasonable to allow a company the full amount of its fixed investment without deduction on account of the cash surplus furnished by the fare payers.

STREET RAILWAYS NOT ENTITLED TO WORKING CAPITAL AS PART OF RATE BASE

The general results reached by the analysis of the New Jersey figures for 1918 seem to be the results that are inevitable in street railway operation under normal conditions. They strikingly confirm the results derived from our less detailed analysis of the city street railroad commissioner's balance sheet of the Cleveland Railway for June 30, of the same year. Both these analyses support what is theoretically the correct position with respect to working capital in street railway valuations, namely, that the entire amount of money required in advance for the purchase of materials and supplies and for other prepayments is much more than offset under normal operating conditions by the accumulation of cash from the daily revenue collections in anticipation of the payment of deferred expenses. If this be true, it proves beyond peradventure that a street railway company with a fully developed business, and receiving from its patrons a revenue sufficient to cover the full cost of service, is not entitled to any allowance whatever for permanent working capital as a part of the capital value to be taken as the base for rate-fixing.